

## CLAIMS

What is claimed is:

- 1           1.     A color calibration method, comprising:  
2           rendering a color image;  
3           in response to a user selecting an adjustment to a first color in the image,  
4     making a perceptually uniform adjustment to the first color in the image; and  
5           rendering an adjusted color image reflecting the adjustment made to the first  
6     color in the image.
  
- 1           2.     The method of Claim 1, further comprising:  
2           in response to a user selecting an adjustment to a second color in the  
3     adjusted image, making a perceptually uniform adjustment to the second color in the  
4     adjusted image; and  
5           rendering a second adjusted color image reflecting the adjustment made to  
6     the second color in the adjusted image.
  
- 1           3.     The method of Claim 1, wherein rendering a color image comprises  
2     printing the color image and rendering an adjusted color image comprises printing  
3     the adjusted color image.
  
- 1           4.     The method of Claim 2, wherein the second color is the same as the  
2     first color.
  
- 1           5.     A color calibration method, comprising:  
2           rendering a color image;  
3           displaying a palette of memory colors appearing in the image;  
4           displaying a menu of memory color adjustments;  
5           in response to a user selecting an adjustment to a first memory color in the  
6     image, making a perceptually uniform adjustment to the first memory color in the  
7     image; and  
8           rendering an adjusted color image reflecting the adjustment made to the first  
9     memory color in the image.

1           6.     The method of Claim 5, further comprising:  
2           in response to a user selecting an adjustment to a second memory color in the  
3 adjusted image, making a perceptually uniform adjustment to the second memory  
4 color in the adjusted image; and  
5           rendering a second adjusted color image reflecting the adjustment made to  
6 the second memory color in the adjusted image.

1           7.     The method of Claim 5, wherein rendering a color image comprises  
2 printing the color image and rendering an adjusted color image comprises printing  
3 the adjusted color image.

1           8.     The method of Claim 6, wherein the second memory color is the same  
2 as the first memory color.

1           9.     A color calibration method, comprising:  
2           rendering a color image;  
3           prompting a user to select a first memory color appearing in the image;  
4           prompting the user to select an adjustment to the selected first memory color;  
5           in response to a user selecting an adjustment to the selected first memory  
6 color, making a perceptually uniform adjustment to the selected first memory color;  
7 and  
8           rendering an adjusted color image reflecting the adjustment made to the  
9 selected first memory color.

1           10.    The method of Claim 9, further comprising:  
2           prompting the user to select a second memory color appearing in the adjusted  
3 image;  
4           prompting the user to select an adjustment to the selected second memory  
5 color;  
6           in response to the user selecting an adjustment to the selected second  
7 memory color, making a perceptually uniform adjustment to the selected second  
8 memory color; and

9           rendering a second adjusted color image reflecting the adjustment made to  
10 the selected second memory color.

1           11.    The method of Claim 10, wherein the selected second memory color is  
2 the same as the selected first memory color.

1           12.    A color calibration method, comprising:  
2           printing a color image;  
3           displaying a palette of memory colors appearing in the image;  
4           displaying a menu of memory color adjustments;  
5           in response to a user selecting an adjustment to a memory color in the image,  
6 making a perceptually uniform adjustment to the selected memory color; and  
7           printing an adjusted color image reflecting the adjustment made to the  
8 selected memory color.

1           13.    A color calibration method, comprising:  
2           printing a color image;  
3           prompting a user to select a memory color appearing in the image;  
4           prompting the user to select an adjustment to the selected memory color;  
5           in response to the user selecting a memory color, identifying the selected  
6 memory color in a perceptually uniform color modeling space;  
7           in response to the user selecting an adjustment to the selected memory color,  
8 adjusting the identified memory color in the perceptually uniform color modeling  
9 space;  
10          transforming the adjusted memory color in the perceptually uniform color  
11 modeling space to a color in a printer color modeling space; and  
12          printing an adjusted color image reflecting the adjustment made to the  
13 selected memory color.

1           14.    The method of Claim 13, further comprising prompting the user to select  
2 the color image and wherein printing a color image comprises printing the selected  
3 color image.

1           15.    A color calibration method, comprising:  
2           storing a color image in an RGB color modeling space;  
3           printing the color image;  
4           prompting a user to select a memory color appearing in the image;  
5           prompting the user to select an adjustment to the selected memory color;  
6           in response to the user selecting a memory color, transforming an RGB model  
7 color value representing the selected memory color to a CIE Lab model color value;  
8           in response to the user selecting an adjustment to the memory color, adjusting  
9 the CIE Lab model color value;  
10          transforming the adjusted CIE Lab model color value to a CMYK model color  
11 value; and  
12          printing an adjusted color image based on the CMYK model color value.

1           16.    The method of Claim 15, further comprising, after transforming the  
2 CIE Lab model color value to a CMYK model color value, smoothing a discontinuity in  
3 an LUT of CMYK color values associated with the transformation of the adjusted  
4 CIE Lab model color value to the CMYK model color value.

1           17.    A computer readable medium having instructions thereon for:  
2           rendering a color image;  
3           in response to a user selecting an adjustment to a first color in the image,  
4 making a perceptually uniform adjustment to the first color in the image; and  
5           rendering an adjusted color image reflecting the adjustment made to the first  
6 color in the image.

1           18.    The medium of Claim 17, further comprising instructions for:  
2           in response to a user selecting an adjustment to a second color in the  
3 adjusted image, making a perceptually uniform adjustment to the second color in the  
4 adjusted image; and  
5           rendering a second adjusted color image reflecting the adjustment made to  
6 the second color in the adjusted image.

1           19.    The medium of Claim 17, wherein the instructions for rendering a color  
2 image comprise instructions for printing the color image and rendering an adjusted  
3 color image comprises printing the adjusted color image.

1           20.    The medium of Claim 18, wherein the second color is the same as the  
2 first color.

1           21.    A computer readable medium having instructions thereon for:  
2 rendering a color image;  
3 displaying a palette of memory colors appearing in the image;  
4 displaying a menu of memory color adjustments;  
5 in response to a user selecting an adjustment to a first memory color in the  
6 image, making a perceptually uniform adjustment to the first memory color in the  
7 image; and  
8 rendering an adjusted color image reflecting the adjustment made to the first  
9 memory color in the image.

1           22.    The medium of Claim 21, further comprising instructions for:  
2 in response to a user selecting an adjustment to a second memory color in the  
3 adjusted image, making a perceptually uniform adjustment to the second memory  
4 color in the adjusted image; and  
5 rendering a second adjusted color image reflecting the adjustment made to  
6 the second memory color in the adjusted image.

1           23.    The medium of Claim 21, wherein the instructions for rendering a color  
2 image comprise instructions for printing the color image and rendering an adjusted  
3 color image comprises printing the adjusted color image.

1           24.    The medium of Claim 22, wherein the second color is the same as the  
2 first color.

1           25.    A computer readable medium having instructions thereon for:  
2 rendering a color image;  
3 prompting a user to select a first memory color appearing in the image;

4           prompting the user to select an adjustment to the selected first memory color;  
5           in response to a user selecting an adjustment to the selected first memory  
6 color, making a perceptually uniform adjustment to the selected first memory color;  
7 and  
8           rendering an adjusted color image reflecting the adjustment made to the  
9 selected first memory color.

1           26.    The medium of Claim 25, further comprising instructions for:  
2           prompting the user to select a second memory color appearing in the adjusted  
3 image;  
4           prompting the user to select an adjustment to the selected second memory  
5 color;  
6           in response to the user selecting an adjustment to the selected second  
7 memory color, making a perceptually uniform adjustment to the selected second  
8 memory color; and  
9           rendering a second adjusted color image reflecting the adjustment made to  
10 the selected second memory color.

1           27.    The medium of Claim 26, wherein the second color is the same as the  
2 first color.

1           28.    A computer readable medium having instructions thereon for:  
2           printing a color image;  
3           displaying a palette of memory colors appearing in the image;  
4           displaying a menu of memory color adjustments;  
5           in response to a user selecting an adjustment to a memory color in the image,  
6 making a perceptually uniform adjustment to the selected memory color; and  
7           printing an adjusted color image reflecting the adjustment made to the  
8 selected memory color.

1           29.    A computer readable medium having instructions thereon for:  
2           printing a color image;  
3           prompting a user to select a memory color appearing in the image;  
4           prompting the user to select an adjustment to the selected memory color;

5           in response to the user selecting a memory color, identifying the selected  
6 memory color in a perceptually uniform color modeling space;  
7           in response to the user selecting an adjustment to the selected memory color,  
8 adjusting the identified memory color in the perceptually uniform color modeling  
9 space;  
10          transforming the adjusted memory color in the perceptually uniform color  
11 modeling space to a color in a printer color modeling space; and  
12          printing an adjusted color image reflecting the adjustment made to the  
13 selected memory color.

1           30.    The medium of Claim 29, further comprising instructions for prompting  
2 the user to select the color image and wherein printing a color image comprises  
3 printing the selected color image.

1           31.    A computer readable medium having instructions thereon for:  
2 storing a color image in an RGB color modeling space;  
3 printing the color image;  
4 prompting a user to select a memory color appearing in the image;  
5 prompting the user to select an adjustment to the selected memory color;  
6 in response to the user selecting a memory color, transforming an RGB model  
7 color value representing the selected memory color to a CIE Lab model color value;  
8 in response to the user selecting an adjustment to the memory color, adjusting  
9 the CIE Lab model color value;  
10 transforming the adjusted CIE Lab model color value to a CMYK model color  
11 value; and  
12 printing an adjusted color image based on the CMYK model color value.

1           32.    The medium of Claim 31, further comprising instructions for, after  
2 transforming the CIE Lab model color value to a CMYK model color value, smoothing  
3 a discontinuity in an LUT of CMYK color values associated with the transformation of  
4 the adjusted CIE Lab model color value to the CMYK model color value.

1        33.    A computer readable medium storing:  
2        a color image;  
3        a palette of memory colors appearing in the image;  
4        controls for adjusting a color on the palette; and  
5        programming for making perceptually uniform adjustments to the color image  
6        corresponding to the adjustment controls.

1        34.    The medium of Claim 33 storing programming for:  
2        rendering the color image;  
3        in response to a user selecting a color adjustment from the controls for  
4        adjusting a color, making a perceptually uniform adjustment to the color image  
5        corresponding to the color adjustment; and  
6        rendering an adjusted color image.

1        35.    A printer, comprising:  
2        a print engine;  
3        a user interface; and  
4        a controller operatively coupled to the print engine and the user interface, the  
5        controller having a processor and a memory storing a color image, a palette of  
6        memory colors appearing in the image, controls for adjusting a color on the palette,  
7        and programming for making perceptually uniform adjustments to the color image  
8        corresponding to the adjustment controls.

1        36.    The printer of Claim 35, wherein the controller memory stores  
2        programming for:  
3        printing the color image;  
4        in response to a user selecting a color adjustment from the controls for  
5        adjusting a color, making a perceptually uniform adjustment to the color image  
6        corresponding to the color adjustment; and  
7        printing an adjusted color image

1        37.    The printer of Claim 36, wherein the controller memory stores  
2        programming for displaying the palette of memory colors on the user interface and  
3        displaying the controls for adjusting a color on the user interface.



1           38.     A printing system, comprising:  
2           a computer having a processor and a memory storing a color image, a palette  
3 of memory colors appearing in the image and controls for adjusting a color on the  
4 palette; and  
5           a printer operatively coupled to the computer, the printer comprising a print  
6 engine and a controller operatively coupled to the print engine, the controller having  
7 a processor and a memory storing programming for making perceptually uniform  
8 adjustments to the color image corresponding to the adjustment controls on the  
9 computer.

1           39.     A color calibration system, comprising:  
2           a means for rendering a color image;  
3           a means for, in response to a user selecting an adjustment to a color in the  
4 image, making a perceptually uniform adjustment to the color in the image; and  
5           a means for rendering an adjusted color image reflecting the adjustment made  
6 to the color in the image.